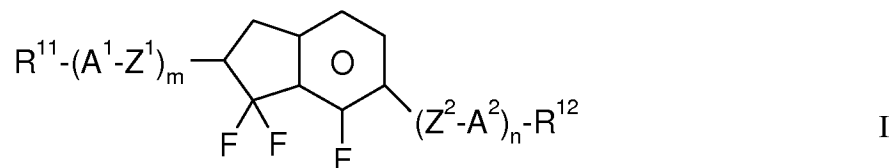
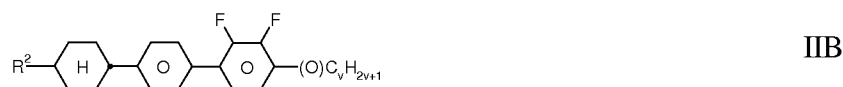


## **REMARKS**

Claim 1 defines a liquid-crystalline medium comprising a mixture of compounds that includes a fluorinated indane compound of the formula I



(where R<sup>11</sup> is an end group, A<sup>1</sup> is a cyclic group, Z<sup>1</sup> is a bridging group, and m is 1) and a compound of formulae IIA and/or IIB



In that m=1 in formula I, the fluorinated indane compounds defined do not include compounds with two rings or cyclic moieties (A<sup>1</sup>) bound to the 2 position of the indane. The compounds of formula I define only fluorinated indane compounds with a single ring or cyclic moiety at this position. The other pending claims (Claims 3-15) all depend on claim 1, so all claims require such a fluorinated indane compound.

### **Rejection under 35 USC 103(a) in view of WO 03/010,120 or equivalent US 2004/0171,866**

Claims 1 and 3-15 are rejected as allegedly being obvious in view of WO 03/010,120 or equivalent US 2004/0171,866. This rejection is respectfully traversed.

Applicants submit US 2004/0171,866 is not prior art in that it was published on September 2, 2004, after the claimed priority date (October 17, 2003) of this application. The PCT application on which US 2004/0171, 866 is based was not published in English, and so US 2004/0171,866 does not have a prior art date under 35 USC §102(e).

WO 03/010,120 was published before the claimed priority date of this application and can

be cited as a reference under 35 USC § 102(a). Applicants do not admit this reference is prior art and reserve the right to antedate this reference if the necessary to overcome the rejection.

As noted in the office action, WO 03/010,120 discloses a broad class of indanes defined by formulae 1a and 1b on page 3 therein. This broad class of indanes encompasses the fluorinated indanes of formula I herein but there is no direction to lead one skilled in the art to select the particular fluorinated indanes of formula 1 and form the mixtures of claim 1.

As noted on page 4 of the office action, twenty general structures of fluorinated indanes are described on pages 18 and 19 of the reference. Of these 20 structures, only 6 have a substitution pattern for fluorine and the group  $-(Z_2-A_2)_n R^{12}$  consistent with formula 1 herein and all 6 structures both exclude compounds of formula I and include compounds other than those of formula I. Of these 6 structures, none show 1,4-phenylene moieties at the 2 position such that the compounds of formula I with 1,4-phenylene moieties are not specifically disclosed. While the definition of the variables for the fluorinated indanes of WO 03/010120 does provide for a single 1,4-cyclohexane moiety bound to the indane at the 2-position, indane compounds with **two** 1,4-cyclohexane moieties are also disclosed, with no preference indicated. There is no teaching or suggestion to select fluorinated indane structures with a single ring/cyclic moiety at the 2 position to form mixtures of liquid crystal media. Such a selection does provide favorable values as discussed below.

When the broad teachings of WO 03/010,120 are considered as a whole, there is no direction, motivation or reason to select fluorinated indane compounds with a single ring/cyclic moiety at the 2 position for liquid crystalline media from the numerous indane compounds disclosed therein. In the absence of such a teaching, suggestion, motivation or reason to select these compounds to form liquid crystalline mixtures, the subject matter of claims 1 and 3-15 is unobvious.

There is also no direction to combine the specific fluorinated indane compounds of formula I herein with compounds of formulae IIa and IIb as defined in claim 1. On page 26, WO 03/010,120 broadly discloses constituents which can be combined with indane compounds in liquid crystalline media by generic formulae II, III, IV, V and VI. Thousands of compounds are encompassed by these broad generic formulae.

Thirty- nine subgeneric formulae are provide on pages 29-32 to more specifically define examples of compounds of formulae-II, II, IV, V and VI. Of these thirty-nine subgeneric formulae, only 8 structures encompass compounds of formulae IIa and IIb and of these 8, only five do not include additional compounds. While specific sub-generic formulae are given that are consistent with the compounds of formulae IIa and IIb, there is no motivation or reason to

select this particular class of compounds for combination with the fluorinated indane compounds of formula I.

In view of the multiple selections necessary to arrive at the liquid crystalline media claimed and the absence of any teaching, suggestion, motivation or reason for any of the selections necessary, the subject matter of claims 1 and 3-15 is unobvious and withdrawal of the rejection is respectfully requested.

The compound disclosed on page 41 of WO 03/010120 conforms to formula I herein but it is not shown to be used in any mixture. The indane compound used in the mixtures of examples 14 and 15 of WO 03/010120 does not conform to the fluorinated indanes of formula I herein in that the substituent at the 2 position comprises 2 ring/cyclic moieties and the compound has 4 fluorine substituents.

It is alleged the liquid crystalline properties of the claimed media (M1-M7) are similar to that of the mixtures disclosed in the examples 14 and 15 of WO 03/01020. Applicants respectfully disagree. From the examples of the present application (M1-M7), it can be seen that the rotational viscosity and/or the threshold voltage is reduced by the use of the fluorinated indane compounds of formula I in liquid crystalline media compared to mixtures containing the compounds of the prior art which have a distinct fluoro-substitution pattern and two rings/cyclic groups. Compared to examples 14 and 15 of WO 03/01020, examples M1, M3 and M4 herein exhibit clearing points in the range of 74 or 75 °C, low temperature stability, as well as very favorable values for the capacitive threshold, rotational viscosities and/or dielectric anisotropy ( $\Delta\epsilon$ ). See below.

<b>Mixture properties</b>	<b>Ex. 14</b>	<b>Ex 15</b>	<b>Ex M1</b>	<b>Ex M2</b>	<b>Ex M3</b>
	Prior art	Prior art	Invention	Invention	Invention
Cl. Point	74	75	74	75	74
$\Delta\epsilon$	-3.9	-3.2	-3.6	-4.8	-4.8
$\gamma_1$	109	91	98	178	171
$V_o$	2.02	2.17	2.11	1.84	1.85

Obtaining such favorable values in selecting the fluorinated indane compounds of formula I for combination with the compounds of formulae IIa and IIb was not obvious in view of the teachings within WO 03/01020.

Applicants respectfully submit the claims are unobvious in condition for allowance. However, if the Examiner has any questions or comments, he or she is cordially invited to telephone the undersigned at the number below.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

/Richard J. Traverso/  
Richard J. Traverso, Reg. No. 30,595  
Attorney/Agent for Applicant(s)

MILLEN, WHITE, ZELANO  
& BRANIGAN, P.C.  
Arlington Courthouse Plaza 1, Suite 1400  
2200 Clarendon Boulevard  
Arlington, Virginia 22201  
Telephone: (703) 243-6333  
Facsimile: (703) 243-6410

Attorney Docket No.: MERCK-3157

Date: April 8, 2009